

CLAIMS

1. A data recording / reproducing apparatus comprising:

a recording medium having a recording area to record therein data;

5 a support device disposed in a predetermined position relationship with the recording medium;

a first probe, which is supported by the support device, for recording data onto the recording medium or reading data recorded on the recording medium;

10 a second probe, which is supported by the support device, for recording data onto the recording medium or reading data recorded on the recording medium; and

a displacement mechanism for relatively displacing the support device with respect to the recording medium,

15 a part of the recording area of the recording medium having a position control area which corresponds to a part or all of a specific range where a tip portion of the first probe can be relatively displaced along with the relative displacement of the support device or which corresponds to a broader range including said specific range, first position information being recorded in a
20 part or all of the position control area.

2. The data recording / reproducing apparatus according to claim 1, wherein the recording area of the recording medium is divided into a plurality of areas which are arranged in a matrix, and the position control area is at

25 least one of the division areas or a part of at least one of the division areas.

3. The data recording / reproducing apparatus according to claim 1, wherein the position control area is formed in a central portion of the recording area of the recording medium.

5 4. The data recording / reproducing apparatus according to claim 1, wherein the displacement mechanism changes the position relationship between the support device and the recording medium so as to relatively displace the first probe and the second probe in a first axis direction and in a second axis direction which cross each other at a right angle on a surface of
10 the recording medium.

5. The data recording / reproducing apparatus according to claim 1, further comprising:

a first detecting device for detecting the first position information
15 recorded in the position control area of the recording medium, through the first probe;

a first recording / reading device for recording data into the recording area of the recording medium or reading data recorded in the recording area of the recording medium, through the second probe; and

20 a displacement controlling device for controlling the displacement mechanism in order to set the position relationship between the support device and the recording medium such that the recording of data or the reading of data is performed by the first recording / reading device at a specific position in the recording medium on the basis of the first position
25 information detected by the first detecting device.

6. The data recording / reproducing apparatus according to claim 5, wherein the first recording / reading device records second position information into the recording area of the recording medium, through the second probe.

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7. The data recording / reproducing apparatus according to claim 6, further comprising:

a second detecting device for detecting the second position information recorded in the recording area of the recording medium, through

10 the second probe; and

a second recording / reading device for recording data into the position control area of the recording medium or reading data recorded in the position control area of the recording medium, through the first probe, on the basis of the second position information detected by the second detecting device.

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8. The data recording / reproducing apparatus according to claim 5, wherein the first position information and the second position information have same content.

20 9. The data recording / reproducing apparatus according to claim 1, wherein the first probe or the second probe is a needle-shaped member which is supported by the support device on base end side thereof and which extends to the recording medium on the other end side thereof.

25 10. The data recording / reproducing apparatus according to claim 1, wherein the first probe or the second probe is a cantilever.

11. The data recording / reproducing apparatus according to claim 1,
wherein the total number of the first probe and the second probe is equal to or
greater than two, and the first probe and the second probe form a
5 one-dimensional or two-dimensional probe array.

12. The data recording / reproducing apparatus according to claim 1,
wherein the total number of the first probe and the second probe is equal to or
greater than four, and the first probe and the second probe are arranged in a
10 matrix on the support device.

13. The data recording / reproducing apparatus according to claim 1,
wherein the recording medium has a recording layer made of a ferroelectric
material.
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14. The data recording / reproducing apparatus according to claim 1,
wherein the recording medium has a recording layer which can be thermally
deformed.

20 15. A recording medium having a recording area to record therein data,
wherein the recording area is divided into a plurality of areas which are
arranged in a matrix, and at least one of the division areas or a part of at
least one of the division areas is a position control area, and position
information is recorded in a part or all of the position control area.

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16. The recording medium according to claim 15, wherein the position

control area is disposed in a central portion of the recording medium.

17. The recording medium according to claim 15, having a recording layer made of a ferroelectric material.

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18. The recording medium according to claim 15, having a recording layer which can be thermally deformed.

19. A data recording / reproducing method of recording data into a
10 recording area of a recording medium or reproducing data recorded in the recording area of the recording medium, by using a data recording / reproducing apparatus comprising: a first probe and a second probe, each of which is supported by a support device, for recording data onto the recording medium or reading data recorded on the recording medium; and a
15 displacement mechanism for relatively displacing the support device with respect to the recording medium,

the data recording / reproducing method comprising:

a position information recording process of forming a position control area which corresponds to a part or all of a specific range where a tip portion
20 of the first probe can be relatively displaced along with the relative displacement of the support device or which corresponds to a broader range including said specific range, in a part of the recording area of the recording medium, and of recording position information into a part or all of the position control area;

25 a detecting process of detecting the position information recorded in the position control area of the recording medium, through the first probe;

a recording / reading process of recording data into the recording area of the recording medium or reading data recorded in the recording area of the recording medium, through the second probe; and

5 a displacement controlling process of controlling the displacement mechanism in order to set the position relationship between the support device and the recording medium such that the recording of data or the reading of data is performed in the first recording / reading process at a specific position in the recording medium on the basis of the position information detected in the detecting process.